## REMARKS

Claims 1-20 are presented for further examination. Claims 1, 6, 8, 9, and 16-20 have been amended.

In the Office Action mailed October 21, 2004, the Examiner objected to Figures 1, 2, 5, 7, and 8 because of informalities as set forth in the Remarks accompanying the Office Action. Applicant has amended the drawings to label the boxes and to provide reference number 13 in Figure 2. No new matter has been added. Approval and entry of these formal drawings into the application is respectfully requested.

Turning to the merits, claims 1, 9, and 18 were rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,712,387 ("Breed et al."). Claims 2-8 and 16-17 were rejected under 35 U.S.C. § 103(a) as obvious over Breed et al. in view of the published reference by Dominguez-Castro et al. Claims 10-14 and 19 were rejected as obvious over Breed et al. in view of U.S. Patent No. 5,687,249 ("Kato"). Claims 15 and 20 were rejected as obvious over Breed et al. in view of U.S. Patent No. 6,724,920 ("Berenz et al.").

Applicant respectfully disagrees with the bases for the rejections and requests reconsideration and further examination of the claims.

The Breed et al. reference is directed to a method and apparatus for controlling deployment of a side airbag to protect an occupant in the seat of a vehicle in the event of a crash. Transducers positioned in the vehicle determine the presence and/or position of an occupant or a part of the occupant in the vehicle. Deployment of the airbag is then controlled upon receipt of detection signals transmitted by the transducer. Nowhere do Breed et al. teach or suggest detecting the motion or speed, *i.e.*, acceleration, of a passenger and controlling the modality of airbag deployment based on the speed or acceleration of the passenger. Moreover, nowhere do Breed et al. teach or suggest using a cellular neural network processing architecture, particularly for use with analog signals for real-time processing thereof.

Kato, U.S. Patent No. 5,687,249, describes a method and apparatus for extracting features of moving objects. Kato particularly describes recognizing moving objects with respect to an observation point external to vehicle and not within a vehicle for activating an airbag. In

**Amendments to the Drawings:**

The attached sheets of drawings include changes to Figures 1, 2, 5, 7, and 8. These sheets, which include Figures 1, 2, 5, 7, and 8, replace the original sheets including Figures 1, 2, 5, 7, and 8.

Attachment: Replacement Sheets

addition, Kato does not teach or suggest using a cellular neural network in combination with a sensing device in the manner recited in the claimed invention.

Dominguez-Castro et al. fail to teach or suggest the features of the invention as discussed above with respect to Breed et al. and Kato.

Berenz et al. describe the memorization of images acquired as a crash recording tool but do not teach or suggest the use of a cellular neural network in combination with internal sensors to detect the motion or acceleration of a passenger to control the modality of deployment of a respective airbag.

Turning to the claims, claim 1 is directed to a smart optical sensor for use in airbag systems having at least one airbag associated with passenger compartments of motor vehicles. The sensor includes an array of photosensitive elements for acquiring images of the passenger compartment, and a circuit for processing the signals corresponding to the images and configured according to a cellular neural network processing architecture adapted to generate, as a function of the image signals, an output signal corresponding to motion of the passenger and indicating the deployment modalities of the airbag to which the sensor is associated in response to the motion of the passenger. As discussed above, nowhere do Breed et al. teach or suggest detecting the motion of a passenger and outputting a signal indicating the deployment modality of an airbag in response to the motion of the passenger. Rather, Breed et al. are concerned with the presence or position of the passenger in order to determine which airbag to deploy. Moreover, nowhere do Breed et al. teach or suggest the use of a cellular neural network for processing image signals in the manner of the present invention. For these reasons, applicant respectfully submits that claim 1 is allowable over Breed et al.

Dependent claims 2-15 are directed to additional features and embodiments of the invention that are also allowable over the combination of references for the reasons why claim 1 is allowable. Moreover, these claims recite photosensitive elements and processing circuitry formed on a single integrated component wherein a plurality of cells are associated with respective photosensitive elements that are implemented in separate islands in a CMOS technology well, and further including at least one analog memory for storing image data by

photosensitive elements of the array and a control logic for executing real-time image processing sequences in the cellular neural network.

As discussed above, the present invention does not detect the "position" of a person occupying a seat during a crash, but rather has the purpose of detecting motion of a person within a vehicle. For example, Breed et al. describe the use of sensors and systems based on charge couple devices, CMOS or antennas, for detecting electromagnetic waves or ultrasound as means for determining the position of a person within a vehicle (see column 7, lines 16-30 of Breed et al.). As such, Breed et al. refer to implementing position detection systems such as laser systems having CCD detectors (as described at column 4, lines 20-26) that are different than the system of the present invention. Moreover, the present invention is based on acquiring images and processing them in a dynamic manner simultaneous with processing by means of a cellular neural network circuit. Nowhere do Breed et al. teach or suggest such a structure. Rather, Breed et al. are concerned with fuzzy logic concepts and artificial neural networks that, in fact, comprise a learning optimization system of the rule processor that can be used for pattern recognition, namely to perform by itself a static pattern recognition processing. Again, this does not teach, suggest, or anticipate the claimed system and method of the present invention.

Furthermore, Breed et al. describe at column 7, lines 38-43, controlling the deployment in the case of the absence of any person occupying the seat, which has been regarded in the present application as already known (see the description of U.S. Patent No. 5,612,876 in the Background of the Invention of the present application).

With respect to claim 9, Breed et al. describe at column 14, lines 55-59, a processing method and related system of implementing a simple activation sensor for a safety belt during a crash. Such a function can be implemented in any way in the present invention by suitable processing of the image acquired in a static manner by using a single image.

Turning to independent claim 16, recited therein is the use of an array of photosensitive elements configured to acquire images of a passenger compartment and a processing circuit coupled to the photosensitive elements and configured to receive signals corresponding to images generated thereby according to a cellular neural network processing architecture that is further configured to generate, as a function of the image signals, at least one

output signal corresponding to motion of the passenger and indicating deployment modalities of the airbag to which the sensor is associated in response to the motion of the passenger, and further reciting at least one analog memory configured to store image data corresponding to the images generated by the photosensitive elements and a control logic circuit for executing real-time image processing sequences in the cellular neural network. As discussed above with respect to claim 1, nowhere do Breed et al., taken alone or in any combination with Dominguez-Castro et al. teach or suggest the combination recited in claim 16. Applicant respectfully submits that claim 16 is allowable over the references cited by the Examiner.

Independent claims 17, 18, 19, and 20 all include the recitation of using the array of photosensitive elements in combination with a cellular neural network processing architecture to generate as a function of image signals acquired from the photosensitive elements at least one output signal corresponding to acceleration of the passenger and indicating deployment modalities of the airbag to which the sensor is associated. Applicant respectfully submits that claims 17-20 are allowable for the reasons discussed above, *i.e.*, nowhere do Breed et al., taken alone or in any combination with Dominguez-Castro et al., Kato, or Berenz et al. teach or suggest the claimed combination recited therein. More particularly, none of these references taken alone or in any combination thereof teach or suggest using an array of photosensitive elements in combination with a cellular neural network and at least one analog memory to store and process image data corresponding to acceleration of the passenger.

In view of the foregoing, applicant submits that all of the claims in this application are clearly in condition for allowance. In the event the Examiner finds minor informalities that can be resolved by telephone conference, the Examiner is urged to contact applicant's undersigned representative by telephone at (206) 622-4900 in order to expeditiously resolve prosecution of this application. Consequently, early and favorable action allowing these claims and passing this case to issuance is respectfully solicited.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Respectfully submitted,

SEED Intellectual Property Law Group PLLC

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ERT:alb

Enclosure:
Postcard
4 Sheets of Drawings (Figures 1-8)

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